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ABSTRACT

The Nation's Report Card, formally known as the National Assessment of Educational Progress (NAEP), has been informing the United States about the state of learning since its first survey was conducted in 1969. This report describes how this project, mandated by Congress and funded by the Department of Education, has evolved. It describes the principal activities of the NAEP since it was relocated to the Educational Testing Service (ETS) in 1983. Today the reports of the NAEP reach wide audiences of school officials and educators at all levels, policymakers, and the public. The Reading Report Card, the Young Adult Literacy Survey, and the Writing Report Card have provided a view of the state of literacy in the United States for those up to the age of 25. The ETS proposal for the new NAEP featured regular assessment cycles, information by grade level and age, sampling and assessment techniques that will enable the NAEP to create achievement scales for each subject, and improved testing administration and governance. NAEP reports have revealed some improvements in reading achievement and some weaknesses in writing achievement. Other reports have considered higher order thinking skills among young Americans and writing skills. Assessments for 1986, in the pipeline at the time of the report, and 1988, in the design stage, will continue NAEP's efforts to serve as a central source of information about educational progress and the context in which it takes place. (SLD)

Profiling American Education

THE NATION'S REPORT CARD naep

Educational Testing Service

This report, No. 18-GIY, can be ordered from the National Assessment of Educational Progress at Educational Testing Service, Rosedale Road, Princeton, New Jersey 08541-0001.

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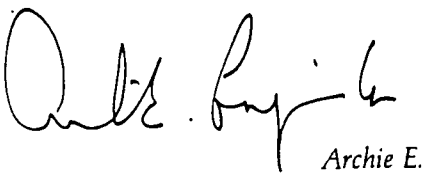
Preface

Each year, the Nation's Report Card, NAEP, is required to provide a report to the Department of Education. While this document is intended to fulfill that requirement, it encompasses all the principal activities of NAEP since it was relocated to Educational Testing Service in mid-1983.

We want to report, briefly, on what NAEP at ETS set out to do, what it has accomplished, and the broad outlines of what it has learned from doing it.

The Report Card has, in this period, conveyed some good news and some bad news. It has marked areas that need improvement and areas where progress is clearly being made. It has been possible to provide these insights because of the willingness of schools and students to participate; a cooperative spirit between ETS and the officials of the Department of Education and the staff of its Center for Education Statistics; the wisdom of NAEP's board of directors, the Assessment Policy Committee; the many who served on Learning Area Committees; the sharp minds and patience of NAEP's Technical Advisory Committee; and the dedication and commitment of the NAEP staff. The Nation's Report Card is in a position to make valid comparisons with results since 1970 because of the high standards followed by the Education Commission of the States, where NAEP resided until its transfer to ETS.

The national interest in education reform has not bypassed the Nation's Report Card; this project is now defined and invigorated by its contribution to that movement.



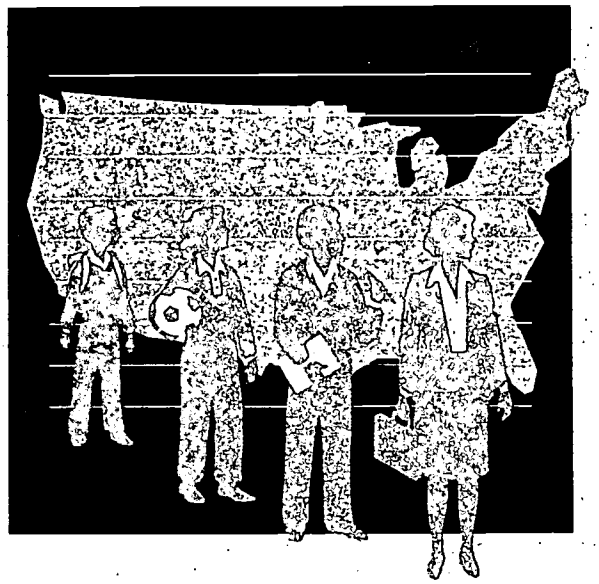
Archie E. Lapointe
Executive Director
1987

The Nation's Report Card

The Nation's Report Card, formally known as the National Assessment of Educational Progress (NAEP), has been informing the nation about the state of learning since conducting its first survey in 1969. Until 1983, NAEP was administered by the Education Commission of the States (ECS), where high measurement standards, combined with innovative ways of measuring achievement, created a body of information that is critical to saying anything about progress—or the lack of it—in education.

Responsibility for preparing and issuing this "report card" was awarded by the Office for Educational Research and Improvement to Educational Testing Service in mid-1983. Every two years, NAEP administers an assessment to about 100,000 students at ages 9, 13, and 17, and in the last administration, at grades 3, 7, and 11.

While the technical aspects of valid measurement had been well attended to in the past, NAEP remained little known and its findings little used. The objective ETS set for NAEP was both to improve it as a useful measure of educational achievement *and* to promote its use.



This report describes how this project, mandated by Congress and funded by the Department of Education, evolved from a little-known effort with a very long name to The Nation's Report Card. Today the report cards reach wide audiences of public officials and educators at all levels, including school administrators and teachers, and they generate news and feature stories in the media that reach the broader public. The report cards also have the virtues of stimulating discussion and, when the data warrant it, supplying practical advice.

It is, of course, the judgment of practitioners and policymakers in education—and ultimately the general public—that will decide when NAEP's objectives have been fully achieved. Doubtless, there is still a long way to go, but there are encouraging signs that NAEP is well on its way to becoming a widely used information system. These positive signs include:

- burgeoning requests for resource materials from people in all walks of education and public life
- the carrying of report card results in the press, both as breaking news and in thoughtful feature stories, and coverage by major television networks, professional journals, and the education press
- the growing involvement of national education leaders and organizations in helping to disseminate and promote careful consideration of the results.

The Nation's Report Card and NAEP are not yet household words, and it remains true that more people are aware of patterns in SAT scores than they are of particular NAEP results. It is equally true, however, that this monitoring effort is emerging from obscurity. The word is spreading farther and faster and receiving more comprehensive treatment as each new report is released.

On the Reading Report Card:

Nothing the federal government does in the field of education is more fundamental or more important than supplying the American people with prompt, reliable, and comprehensible data on the educational performance of our children. One of our best instruments for carrying out this solemn responsibility is the National Assessment of Educational Progress (NAEP). It is the closest thing we have to a barometer of our educational performance as a society and as a nation, the best approximation of a "hospital chart" on which are recorded the facts that enable us to see whether our ailing educational system is getting better, the nearest facsimile to a "report card on American education" that helps us understand how our sons and daughters—and our schools—are doing.

—Education Secretary
William Bennett

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The NAEP results signal key points for continuing action and added resources. I cite particularly the need to make even greater advances in minority student scores. NAEP tests provide us with essential long-term trend results. They are valuable for nationwide measurement of progress. They will also be more and more useful for individual states to measure results of their recent reforms.

—New York State Education
Commissioner Gordon Ambach

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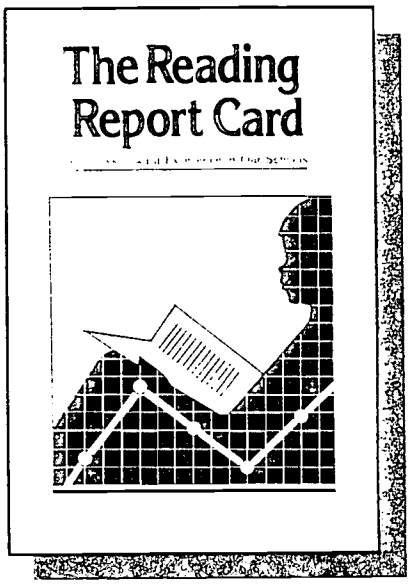

Overall, the positive findings outweigh the troubling ones. Congratulations are therefore extended joyfully to the children and young people, to their teachers and parents, and to those who helped them gain higher proficiency. And to NAEP, congratulations on a fine report, one that helps make possible a more rational debate on the issues and a more careful analysis of our successes and our failures. Hopefully, these will contribute to the greater reading proficiency of *all of our children and young people.*

—Harvard University
Professor Jeanne Chall

* * *

With this report the National Assessment justifies the hopes of those who launched it in the 1960s. It is becoming an increasingly useful measure of America's educational progress.

—Harvard University
Senior Lecturer Harold Howe

On the Young Adult Literacy Survey:

This landmark study brings clarity to a debate that has, for far too long, been mired in distortion and confusion. It provides an understandable definition of literacy and vividly reminds us that language proficiency means much more than the mastery of words. The NAEP report must be read by everyone who cares about the quality of American education and the future of the nation.

—Dr. Ernest L. Boyer, President,
The Carnegie Foundation
for the Advancement
of Teaching

* * *

Another fundamental service rendered by this study has to do with the concept of literacy itself. In years past, we oversimplified it. We created single standards. If you could sign your name, you were literate. If you could read, you were literate. If you could read at a certain grade level, you were literate. Books and articles were often based on simplistic notions of what literacy means. But this study—the most comprehensive of its kind ever undertaken—rejects that facile approach. It rightly points out that literacy is multifaceted and multidimensional.

—Education Secretary
William Bennett

* * *

It is to the great credit of the National Assessment of Educational Progress, then, to have produced this careful study. Their findings are surprising and important, and their report deserves our fullest attention.

—Senator Daniel P. Moynihan

* * *

Is illiteracy a major problem among young adults in the United States? That is the major question addressed by the work summarized in this report, work that has produced the most conceptually and analytically sophisticated study of adult literacy ever conducted in this country. Now we, as readers, may judge for ourselves what the answer to the question must be.

—Thomas Sticht, literacy expert

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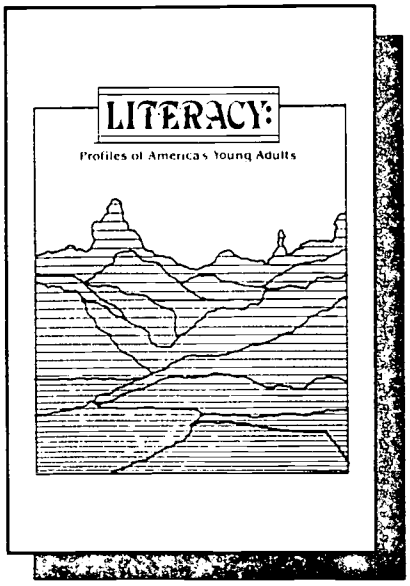
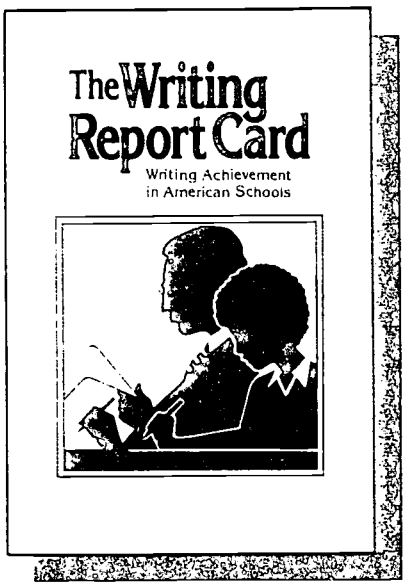


On the Writing Report Card:



The National Assessment of Educational Progress is to be commended for highlighting the completely unsatisfactory level of writing achievement of young people in this country. Even though what has been assessed is only rough draft writing, the evidence is clear that the schools are neglecting a critically important skill and, quite frankly, have been neglecting it for decades. We are a nation that fears writing. Part of that fear comes from insufficient practice and experience with writing in school. The conditions for learning to write have always been bad. It's about time we, as a people, do something substantial and far-reaching to bring about the day when ours will truly be a nation of writers.

—John Maxwell, Executive Director,
National Council of Teachers of English

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Reading and Literacy:

With the publication of *The Reading Report Card*, which presents trends in reading for schoolchildren aged 9, 13, and 17 over four national assessments from 1971 to 1984, and of *Literacy: Profiles of America's Young Adults*, which reports results of a 1985 assessment of reading skills in a nationwide household-based sample of adults aged 21 to 25, it is now possible for the first time to gain a nearly complete view of the state of literacy in the U.S., at least up to age 25. We can rejoice in the accomplishments of the National Assessment of Educational Progress (NAEP), formerly conducted by the Education Commission of the States (ECS) and now by the Educational Testing Service (ETS), not only for the fact that these assessments were performed at all, but also for the advanced technology and methods employed by ETS to make the findings more meaningful and interpretable than they previously were.

—John B. Carroll, Kenan Professor
of Psychology Emeritus, University
of North Carolina, Chapel Hill
(*Phi Delta Kappan*, February 1987)

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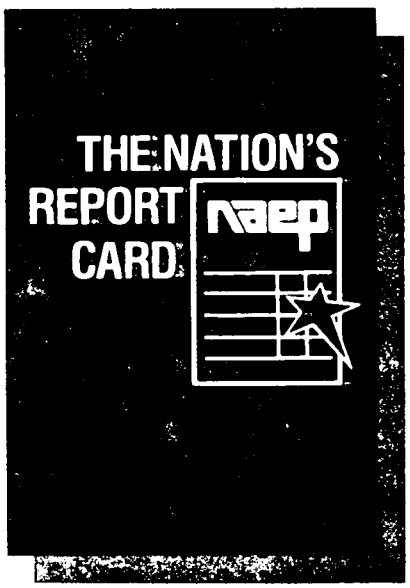


The New Design

In its proposal for the five-year grant to administer the National Assessment, ETS proposed "A New Design for a New Era." The words "new era" were intended to embrace today's emphasis on excellence, the growing use of assessment at the state level, and the lessening of fears that a federally funded assessment would lead to a "national curriculum" or a "national standard." These fears had caused the originators of NAEP to structure it so that there would not be such unintended results. The "new design" was the result of applying new psychometric methodology and technology to the quest for more—and more useful—information, as well as taking advantage of a climate more hospitable to assessment. The principal features of the new design are:

- *Regular* assessment cycles, spaced so that the same cohorts of students can be monitored at three points during their schooling.
- *Information* by grade level, as well as age.
- Sampling and assessment techniques that permit NAEP to (1) create *achievement scales* in each subject area (in the past, NAEP was limited to reporting only the results of individual exercises or averaging the percent of correct answers); and (2) collect unprecedented amounts of *student background and attitude* information, permitting examination of many environmental factors and their links to student achievement.
- Relating achievement information to the contexts of learning: *home environment*, *teacher practices*, and *school characteristics*, as well as information about the students themselves.
- Providing some *practical suggestions*, where the findings and analysis warrant them, as to how achievement can be improved, although NAEP's central mission remains measurement of educational progress.
- Devoting as much emphasis to *disseminating* the results as gathering the data.
- Strengthening NAEP's *governance system* by creating a strong and independent governing board, the Assessment Policy Committee.

Despite the far-reaching nature of these changes, the central characteristics of NAEP have been maintained. The law prescribes that objectives and exercises are to be developed through consensus, and design improvements were implemented in ways that preserve the ability to compare current achievement with that revealed by past assessments.

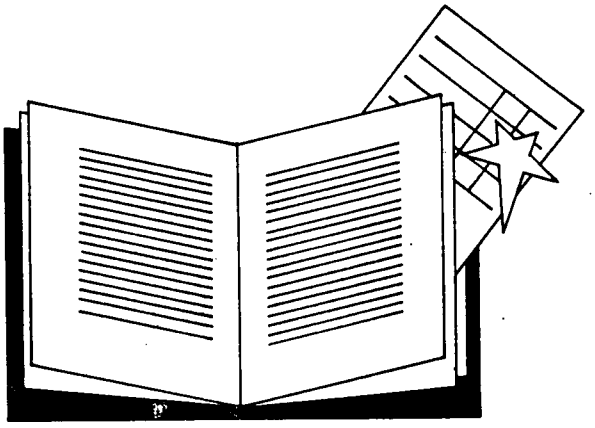
NAEP is a highly complex undertaking; it has to be in order to report clearly and precisely on educational achievement and the environment in which it takes place. This complexity is frustrating to many researchers who wish to analyze the raw data for themselves. Consequently, in the 1987-88 design, a renewed effort was made to facilitate analysis by secondary researchers, and NAEP staff also provide *ad hoc* technical assistance, trying to follow the counsel of Albert Einstein: "Everything should be as simple as possible, but no simpler."

A Nation of Readers?

In the fall of 1985, *The Reading Report Card* reported that practically all 13-year-old students (95 percent) could read for themselves at the second or "basic" level, and almost as many 9-year-olds could read at the first or "rudimentary" level. The long journey from the 1647 Act of the Commonwealth of Massachusetts creating the first public school system to today's achievement level in reading has been an impressive national advance.

NAEP's reading trend report, bearing considerable good news, was released to an unsuspecting public that had grown accustomed to hearing of the latest failure in American education. Media coverage with a more heartening tone reached more than 50 million homes. At the press conference, Secretary of Education William Bennett announced that he was the first cabinet secretary to appear at a NAEP press conference, and he was pleased to do so. His presence and his statement underscored the importance he was attaching to both education reform and the only national means by which its results could be measured.

The development of a new NAEP Reading Scale enabled the accurate reporting of trends over time, based on four National Assessments since 1971, and featured comparisons of performance by subgroups in the student population. This new style of report was made possible by the technologies brought into play as a result of the "new design." The NAEP Reading Scale records proficiency from 0 to 500 with five levels of proficiency indicated at 50-point intervals ranging from 150 to 350. Most importantly, at each interval, NAEP describes what students "know and can do" at that level, thus meeting the objective set for NAEP by Ralph Tyler at its beginning. Performance is described in one word, in one sentence, and in one paragraph; in addition, each level is illustrated with examples of specific reading tasks students were likely to be able to perform. The levels are Rudimentary (150), Basic (200), Intermediate (250), Adept (300), and Advanced (350).



While American youngsters approached mastery of the basics, they were not becoming particularly good readers.

A Decade of Writing

The report chronicles modest but generally steady improvement in reading achievement at the three age levels measured over the course of a decade and a half. It also reveals that performance for Black and Hispanic students was rising faster than that of the general population, and the gap between minority and White students, while still unacceptably wide, was narrowing somewhat. Underscoring the magnitude of this gap, NAEP reported that "the average reading performance of Black and Hispanic 17-year-olds is only slightly higher than that of White 13-year-olds."

While American youngsters approached mastery of the basics, they were not becoming particularly good readers. By age 17, only two in five were "adept" readers, demonstrating the ability "to find, understand, summarize, and explain relatively complicated information." Disappointingly, only five in 100 of the 17-year-olds were "advanced" readers, meaning that they demonstrated ability "to synthesize and learn from specialized reading materials." The report called for attention to the teaching of higher level reading skills.

A copy of *The Reading Report Card* went to every local school superintendent, governor, chief state school officer, member of Congress, state testing director, and state board of education and legislative leader in the land, and a four-page summary of the results reached every school. This summary, a NAEPGRAM featuring points for discussion and followup by principals and teachers, represented a new effort by NAEP to reach out directly to those who work with children.

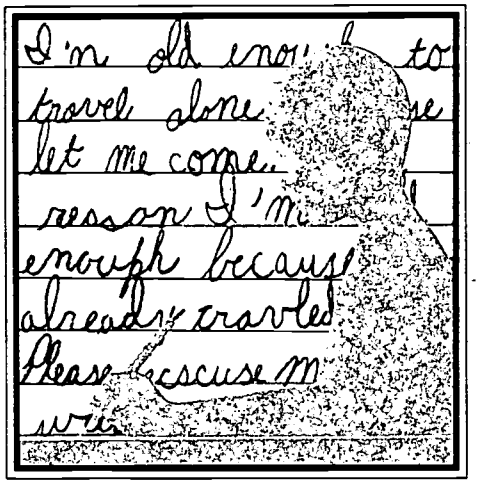
When NAEP assesses writing, it does so by having students write, not by having them answer multiple-choice questions about writing. In the 1984 assessment, 90,000 essays had to be scored by trained readers. That gives a general idea of the scope of this endeavor.

Before analyzing the great body of data yielded by the assessment, NAEP compared performance on a set of writing tasks common to the 1974, 1979, and 1984 assessments. This analysis resulted in the issuance of *Writing Trends Across the Decade, 1974-84*, a report addressing the central question in NAEP's traditional mission: Are we making progress or not?

The answer emerged before the report was released. When the findings were announced at the annual meeting of the Education Writers Association in spring 1986, it was clear that the news, this time, was not good.

In the five years between the first two assessments, average performance across the different kinds of writing lost some ground. In the next five years, it was regained, and performance levels were about the same when the decade ended as when it began.

While the trends for White, Black, and Hispanic students were similar, Black and Hispanic students at ages 13 and 17 demonstrated generally lower writing achievement than did White students. One divergence in trends was that 9-year-old Hispanic students showed consistent improvement over the decade, while both Black and White 9-year-olds showed more varied results.



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The failure to improve was somewhat perplexing since NAEP also reported increased attention to teaching the process of writing over the decade; greater attention was being given to planning, rewriting, and teacher suggestions for improvement. The amount of time spent on writing instruction increased in the first half of the decade then leveled off. On the other hand, the amount of time 17-year-olds spent writing decreased during the first half of the decade, then returned to earlier levels by 1984. These students reported writing about four papers during a six-week period.

Interpreting these discouraging results, NAEP staff considered whether or not they indicated that recent reforms in writing instruction, initiated at both state and local levels, were proving ineffectual. Staff decided that was unlikely because instructional changes in the second half of the decade accompanied the rebound in writing performance.

A one-page summary of the results was distributed to a national audience of educators. It featured commentary from Secretary Bennett and a key advocate of writing instruction, Executive Director John Maxwell of the National Council of Teachers of English.

Not a Nation of Writers

The Writing Report Card, analyzing the 1984 assessment, was released in December of 1986 at the National Press Club in Washington, D.C. The headline on the ETS press release was unequivocal: "Weak Writing Performance Signals Widespread Flaws in American Students' Critical Thinking and Communication, Nation's Report Card Warns." The results reverberated for weeks in the media, beginning with front-page news stories, moving to the editorial page, and providing a storehouse of subject matter for columns and letters to the editor. A lot had been said in general about trouble in the schools and deterioration in the learning of students: Here was some solid evidence of a grave deficiency. Demand for this NAEP report was unprecedented.

The press release reported that:

- Although America's youth can write at the minimal level, they cannot express themselves sufficiently well to make themselves understood.
- Most American students, majority and minority alike, are unable to write adequately except at the simplest of tasks—despite a recent national focus on writing instruction in the schools.
- Writing performance improves from grade four to grade eight to grade 11, but even at grade 11, fewer than one-fourth of the students perform adequately on tasks that require the kinds of writing skills necessary for success in academic studies, business, or the professions.
- Students who do more planning, revising, and editing are better writers than those who do less, and whether students learn these process skills through formal instruction or not, those who use them do write better.

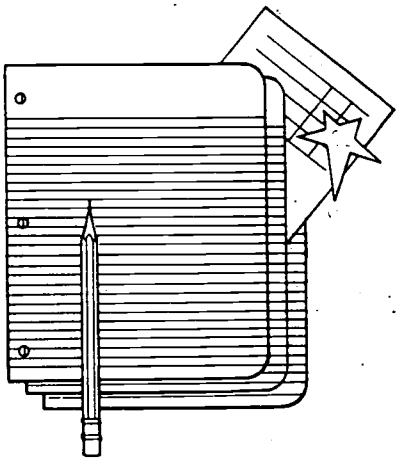
The new technologies NAEP is using, combined with the greatly increased information NAEP is collecting from and about students, permitted reporting more than simple measurements of achievement. A new writing proficiency scale made it possible to aggregate student achievement instead of just reporting results from individual task assignments. Ninety-five questions about instructional practices and student behaviors permitted the construction of 11 scales that can be related to achievement in numerous classroom and individual contexts. A listing of these scales demonstrates the breadth of NAEP material available to educators concerned with writing:

- Value Placed on Writing, based on 14 questions about students' attitudes
- Extent of Teacher Focus on Final Writing Product, based on nine questions
- Use of Revising and Editing Strategies, based on 12 questions
- Student and People the Student Lives with Use Writing for Instructional Purposes, based on 12 questions
- Extent of Process-Oriented Teaching Activities, based on nine questions
- Student and People Student Lives with Use Writing for Personal/Social Purposes, based on 11 questions
- Attitudes Toward Writing, based on eight questions
- Teacher Feedback, based on six questions
- Number of Pieces of Writing in English Class, based on seven questions
- Use of Planning Strategies, based on four questions
- Sharing Writing with Others, based on three questions

These scales, when related to performance, generated a considerable number of conclusions that were the basis of providing some practical advice to teachers. For example:

- Positive attitudes toward writing deteriorate as students move through school.
- Students report that teachers comment more frequently on mechanics— spelling, punctuation, and grammar—than on ideas and how to express them. Constant negative feedback may erode enthusiasm about writing.
- Writing for subjects other than English increases between grades 4 and 8, but decreases again in senior high school.
- Students who write more reports and essays write better.
- Better readers tend to have higher writing achievement.

The report was sent to all school superintendents and to federal and state officials in key executive and legislative positions. At a Washington, D.C., press conference, Mary Futrell, president of the National Education Association, and Albert Shanker, president of the American Federation of Teachers, commented on the results and offered their advice on what might be done to improve performance. A four-page NAEPGRAM was mailed to all schools and to leaders throughout education—154,000 copies in all. The NAEPGRAM was addressed to America's teachers, offering specific suggestions for improving the teaching of writing.



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While there was not complete agreement with the findings and the methods used to obtain them, they were not ignored. Initial coverage reached 30 million homes. *USA Today* devoted a full-page to NAEP's findings and other discussions of American students' writing. James Kilpatrick followed with a column describing the results as depressing and asking how our youngsters will fare in a real world that demands written communication. A press release issued by Secretary Bennett said, "Alas, *The Writing Report Card* makes clear how far we still have to go. . . ."

Young Adults: Literacy as a Continuum

In recent years, the nation's concern about literacy has deepened. While there has been fear that the adult population has a high rate of illiteracy, there have been no studies that consistently measure literacy over time, revealing whether we are gaining ground or losing it. Those studies that have been done used different definitions and tended to establish an arbitrary cut-point that divided the population neatly into two camps, the literate and the illiterate.

NAEP completed its study of young adult literacy and reported the results in the fall of 1986. This was a household assessment of 3,600 young adults aged 21 through 25; they constituted a nationally representative sample of all young adults living in households. From the beginning, NAEP set out to *profile* the literacy skills of this population, recognizing that literacy is a continuum, not a present or absent quality. The report was titled *Literacy: Profiles of America's Young Adults.*

We do have a very large *literacy* problem, NAEP reported, but it is not a matter of widespread illiteracy. Nearly all of those surveyed, about 19 in 20, could read text and perform simple and routine tasks using print. Large proportions, however, could not go beyond those simple tasks. The news release summed it up: "Their literacy skills are limited, stifling individual and national potential in our increasingly technological society."

The report's authors emphasized the importance of distinguishing between simplistic and realistic descriptions of American literacy levels. Instead of defining the major problem as one of illiteracy, they identified a more complex situation marked by high proportions of people unable to solve tasks of moderate complexity, even though they could read a text. The major problem, NAEP's study concluded, was limited "information-processing skills." To be effective, administrators of remedial programs have to be sure they are dealing with the right problem. Of course, there are pockets of outright illiteracy, disproportionately present among Black and Hispanic young adults and those who have not completed high school, but the limited range of skills among the preponderance of young adults is the more pressing national problem.

Secretary Bennett, after commenting on the finding that most all could read, said: "For the $263 billion America spent on education last year, we should do better than this. The United States is not awash in illiteracy, but most of our young people are not very literate. Young adults who have been to school ought to be able to use a bus schedule, decipher a road map, and extract information from a newspaper."

From the beginning, NAEP set out to* profile *the literacy skills of this population, recognizing that literacy is a continuum, not a present or absent quality.

Putting It All Together

There were varying interpretations of how great the problem is and how extensive our efforts to increase literacy skills ought to be. But NAEP's objectives had been served: A debate was being stimulated and informed with accurate information.

The findings were presented in a 500-page technical report, a 68-page descriptive report, and a one-page NAEPGRAM. The audiences for the findings included 5,200 local Chamber of Commerce officials, 2,000 chief executive officers of major corporations, the nation's college presidents, and a lengthy list of federal and state officials.

While *Literacy* had received widespread attention, ETS sought to have its implications examined from different perspectives. A reading expert (Richard L. Venezky), an educational historian (Carl F. Kaestle), and a labor economist (Andrew M. Sum) were commissioned to analyze and comment on the data. Their report, *The Subtle Danger: Reflections on the Literacy Abilities of America's Young Adults* (published with nongrant funds), was released at a conference held jointly by the Library of Congress Center for the Book and the ETS Center for the Assessment of Educational Progress in January 1987.

After a reanalysis of the data, the authors concluded with a chapter on what they think this survey's yield means for education (in school, nonschool, and family settings), labor, and citizenship. In their closing words, the "subtle danger" is vividly clear:

> We will not collapse tomorrow from a lack of adequate literacy skills, but we may find that year by year, we continue to fall behind in international competitiveness, and that society becomes more divided between those who are skilled and those who are not.

Each of these reports contains a wealth of information about a single learning area. So it is not surprising that NAEP asked: What does it all mean if one looks at the assessments collectively, and how can an overview be communicated to a broader audience? The answer was another report, *Learning to Be Literate in America: Reading, Writing, and Reasoning*. Addressed to a broader audience and more than a summary, it goes beyond regular NAEP report cards in suggesting steps that can be taken by policymakers, administrators, teachers, and interested citizens.

This combined look at the reading, writing, and literacy assessments showed that students do improve their reading and writing as they move through school, and young adults read better than 17-year-old students, showing that progress—in reading, at least—continues after leaving high school.

The authors conclude that most children and young adults demonstrate a "surface understanding" of a range of reading materials appropriate for their age, and express similar understanding in writing. Moreover, this level is adequate to enable people to engage in a wide array of reading and writing experiences, some that require only simple skills and others that require broader and more varied skills. Such tasks may range from making sense of a shopping list, to understanding a letter from a friend, to getting the gist of a report on a recently completed science experiment.

Higher-Order Thinking

However, the authors note that only small percentages of children and young adults can reason effectively about what they are reading and writing. In school and in society, we expect a reader to be able to analyze, evaluate, and extend the ideas that are presented, just as we expect a writer to elaborate upon and defend judgments that are expressed.

The report ends with 12 recommendations. They are not all new, the authors say, but they have never been implemented in a systematic and coordinated way.

Learning to Be Literate was published in March 1987. The implications for training and literacy programs in the private sector, as well as for education, led NAEP staff to distribute the report through major business channels in addition to the established NAEP network.

In school and in society, we expect a reader to be able to analyze, evaluate, and extend the ideas that are presented, just as we expect a writer to elaborate upon and defend judgments that are expressed.

At the same time that the schools are elevating more students to basic and minimal levels of proficiency, deficiencies in higher-order thinking skills are becoming increasingly apparent. In fact, improving the teaching and measuring of these skills has become a national priority. This need is pointed out in all of the prestigious reports on education, such as *A Nation At Risk* and *Educating Americans for the 21st Century*. The latter report underscored the need this way:

> We must return to the basics, but the basics of the 21st Century are not only reading, writing, and arithmetic. They include communication and higher problem-solving skills, and scientific and technological literacy—*thinking* tools that allow us to understand the technological world around us.

The proper teaching of higher-order skills in science involves "hands-on" approaches. This means the use of real equipment and the availability of laboratory instruction. Too often, students receive all of their information through books and paper-and-pencil exercises. This print orientation is reinforced through paper-and-pencil—and frequently multiple-choice—tests. To help reverse the trend, NAEP set out to develop a hands-on assessment for higher-order skills in mathematics and science, funded by the National Science Foundation.

The hands-on tasks were developed and pilot-tested as prototypes for use in future national assessments. However, the concepts measured—and the innovative approaches used—are equally suitable for classroom instruction. Because of this, NAEP has developed *Learning By Doing: A Manual for Teaching and Assessing Higher-Order Thinking in Science and Mathematics*.

Controlling Written English

The tasks presented in the manual require students to think independently about a variety of relationships in mathematics and science, arranged in a hierarchy of complexity. At the simplest level students are asked to classify and sort by identifying common characteristics of plants and animals. At the most complex level, students are asked to design and conduct complete experiments. These prototypes use a number of different formats, including paper-and-pencil tasks, demonstrations, computer-administered tasks, hands-on tasks, and combinations of these formats. The manual is offered to schools as a resource to encourage hands-on instructional approaches and foster improved thinking skills among the nation's students.

NAEP has a history of developing innovative approaches to assessment and has refused to take the easy route of relying solely on multiple-choice tests. Dwindling resources over the years, however, have seriously impaired NAEP's ability to invest in such development. This NSF-funded project has permitted NAEP to renew its efforts at a time when new approaches are needed.

Whenever writing is discussed, NAEP is asked: "Have American schoolchildren mastered the mechanics?" Americans want to know how the schools and their proteges are faring with grammar, punctuation, and spelling. NAEP data clearly indicate that while students do not express themselves in writing very clearly or completely, they do a reasonably good job with the mechanics of what they do write. And, of course, this is not accidental: The mechanics of writing are emphasized in teaching.

These matters are the subject of *Grammar, Punctuation, and Spelling: Controlling the Conventions of Written English at Ages 9, 13, and 17*, to be published soon. As students progress through school, they write a steadily increasing proportion of complex sentences and fewer fragments and run-on sentences. Spelling improves markedly, and students at all ages make few errors in word choice or capitalization. In all, the report concludes, students are learning what they are being taught. Learning the conventions of writing is an individual process, with particular skills being learned and practiced by particular children at particular times: There is no consistent profile of the types of mistakes a poor writer will make, for example.

State Assessments

At its inception, NAEP was carefully crafted to yield achievement information about the nation and four geographical regions. Assurances were clear that this federally funded assessment would not be used to measure a particular school, school district, or state. NAEP provided—and still supplies—exercises to states, and many states use them in many ways, some to make their own comparisons to national results.

Slow but steady changes in attitudes toward education, particularly among governors giving high priority to educational reform, lessened the traditional resistance to drawing on NAEP resources for state-level assessments that would provide comparison information.

By 1982, ETS was proposing that "assessment 'packages' could be developed and made available to states to form part or all of their state assessment program . . . . What is suggested here are contractual arrangements with states which are quite independent of NAEP assessment budgets." As more states elected to participate in this type of arrangement, it was hoped that a system of state assessments and comparisons would unfold. By the summer of 1984, NAEP was ready to provide such contractual arrangements, and by the spring of 1985 it had received a clear and detailed set of guidelines for state assessments from NAEP's governing board, the Assessment Policy Committee.

The most ambitious of these early efforts came to fruition in 1985 with three state projects coordinated by the Southern Regional Education Board (SREB). This organization released the report *Measuring Student Achievement: Comparable Test Results for Participating Southern States, the South and the Nation*. In the foreword, Winfred L. Godwin, president of SREB, said:

> For the first time, perhaps ever, several states know how well their eleventh grade students read compared to current and truly national results, compared to a region of the nation *and* compared to each other. The states are Florida, Tennessee, and Virginia. These states, in conjunction with the Southern Regional Education Board and the National Assessment of Educational Progress, by design, have used a common test with a representative sample of students in each state to measure the reading proficiency of high school juniors.

Assessment results also became available in 1985 for Wyoming and New York.

The regular NAEP grant provides neither for the cost of conducting state-level assessments nor for the developmental work necessary to create a program through which the states contract for them. Developing such a state comparison system requires that the organization administering the NAEP grant take an entrepreneurial approach. ETS has done so; indeed, it subsidized the first round of state assessments in order to encourage participation.

By the fall of 1985, interest in NAEP state assessments quickened. In 1986, ETS had contracts for assessments in 10 states, including eight members of the SREB. Two more states used third-party contractors, and one state just happened to have representative data from the regular NAEP assessment. In all, 13 states, representing about one-third of the nation's schoolchildren, achieved comparison data. The basic models these states elected were among the following:

The *Massachusetts* model:

Massachusetts contracted with a third party to carry out the 1986 NAEP assessment with *all* students in grades 3, 7, and 11. NAEP assisted Massachusetts and the contractor. Maine followed a variant of this model.

The *California* model:

Because the NAEP sample in California for the 1985-86 assessment happens to be large enough to be representative of the students in the state, it can provide valid state data, as well as serve the national program. This is an ideal situation, both cost-effective and technically sound.

The *Wyoming* model:

Wyoming uses a 20 percent sample of students and uses all NAEP items and procedures. Local districts can participate on an optional basis if they elect to sponsor a district project.

The *Southern Regional Educational Board* model:

In 1986, eight states conducted eleventh-grade assessments in one or two curriculum areas. NAEP selected the items, determined the sample, trained the administrators, analyzed the data, and provided reports exclusively to each state. There are eight states participating in 1987.

The *Georgia* model:

Georgia assessed students in three curriculum areas in all three grades. Services provided by NAEP were the same as in the SREB model.

As NAEP gained experience in the first round of state assessments, procedures and training were strengthened to give greater assurance of the validity of the resulting comparisons. The making of valid comparisons requires complete uniformity of procedures, and after its review of the comparison program, the Technical Advisory Committee, in reporting to both NAEP staff and the Assessment Policy Committee, urged greater diligence in achieving such uniformity.

In 1987, NAEP is under contract to carry out nine state assessments, of which eight are in an arrangement coordinated by SREB. The ninth state, Florida, also an SREB state, represents an additional—and a very significant—component of the state comparisons program.

Florida has contracted with NAEP/ETS to assess *all* third-grade students in reading achievement. Results will be reported for individual schools, districts, regions, and the state, all of which can be compared to the nation (in keeping with the nature of NAEP, scores for individual students will not be reported). In future years, Florida plans to expand to more grade levels.

NAEP is committed to serving states, and particularly to participating in efforts to conduct state assessment programs that provide valid comparisons to national results. It is also committed to greater involvement of states in the design of the National Assessment, whether or not they are conducting comparison assessments. To further this objective, NAEP created a State Advisory Committee in the summer of 1986 to help in the development of the 1988 Assessment.

In the Pipeline: the 1986 Assessment

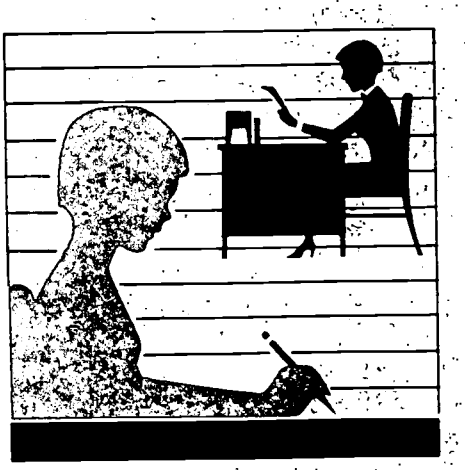
What has been described thus far in this report, with regard to students, results from the 1984 assessment. In 1986, NAEP went into the field with the largest assessment ever. It covered:

- Reading
- Mathematics
- Science
- Computer Competence
- U.S. History and Literature (for 17-year-olds)
- Language-Minority Students

Except for history and literature, covering only 17-year-olds, the 1986 assessment is of 9-, 13-, and 17-year-olds, as well as 3rd-, 7th-, and 11th-graders. The assessment, designed in 1985, included field-testing of assessment exercises and background questionnaires for teachers and school administrators in schools across the country early in 1985. That spring, meetings were held for six Learning Area Committees to review the results of the field tests, consider the comments of external reviewers, and make final revisions. These Learning Area Committees are the means by which NAEP achieves a broad consensus in the development of learning objectives and exercises.

In the summer of 1985, the assessment package had to be submitted to the Office of Management and Budget for clearance. Special studies had to be conducted to measure the effects of changes ETS had made in the assessment design, the results of which would provide the "bridges" necessary to enable comparing the new data with the old.

Participation in NAEP is voluntary on the part of the schools, and that cooperation had to be secured. School participation is essential to the continuation of NAEP, and throughout NAEP's history the rate of cooperation has been quite high. In June 1985, letters were sent to the chief state school officers of states in the sample. This correspondence was followed by a second letter listing the selected school districts within each state. Then, in July, NAEP contacted superintendents of the selected school districts and principals of the selected private schools, following up with a package of NAEP materials and a list of schools in the sample. Meetings with school representatives were then arranged through telephone contacts.



In 1986, NAEP went into the field with the largest assessment ever. It covered: reading, mathematics, science, computer competence, and U.S. history and literature (for 17-year-olds).

In Design: the 1988 Assessment

School cooperation has become more difficult in recent years, as states and school districts have expanded their own testing programs and education reform has emphasized more "time on task." Cooperation is achieved through telephone contacts, correspondence, and personal visits. For the 1986 assessment, the participation rate for all schools approached was 85 percent. The full assessment was in the field in February 1986 and was completed by mid-May.

Analysis of the 1985-86 survey data is under way at NAEP. Reports are being designed, and proficiency scales are being developed. Beginning in the second half of 1987, the report cards will be issued to the public. There will be a reading trend report, making comparisons for five assessments, dating back to 1971. There will be a computer competence report, the first ever for NAEP, and it will establish a baseline for reporting change. There will be a *Mathematics Report Card* and a *Science Report Card*. Each will measure proficiency on several scales—instead of a single scale as was the case for reading and writing—dictated by the categories of content, for example, biology vs. chemistry. Both of these report cards will provide trend information and relate proficiency to learning contexts, as did *The Writing Report Card*. There will also be a report on the results of the assessment of history and literature for 17-year-olds, conducted for the Educational Excellence Network and funded by a grant from the National Endowment for the Humanities. In addition, a report is planned on the educational experiences of language-minority students.

It is typical that, at any one time, NAEP is working on three National Assessments, reporting one out, collecting data for a second, and designing a third. Work on a new assessment begins with the selection of the subjects to be surveyed. This narrowing of options is the work of the Assessment Policy Committee, which selected the following 1988 assessment subject areas in the fall of 1985:

- Reading
- Writing
- U.S. History
- Citizenship
- Geography

Reading is assessed in each biennial survey because of its importance. Congress has required by law that reading, writing, and math be assessed at least once every five years, and writing is scheduled for 1988 since it was last assessed in 1984. It is time to assess social studies, last covered (partially) in 1982, and the desire to assess more specific subject matter led the APC to choose U.S. history and citizenship. The APC also hoped to assess geography if funds could be found for it: Funding from the National Geographic Society has now made that possible.

The present five-year grant to NAEP provides resources for ETS to carry the 1988 assessment to the point of development and the selection of the sample of schools. Except for geography, on which work has begun, the assessment has been developed to the point of presenting the field-test package to the Office of Management and Budget and launching the field test. Next, Learning Area Committees are to review the results and guide the preparation of the final assessment.

Resources Available from NAEP

While the emphasis in this brief report has been on the communication of assessment results, NAEP also supplies a range of other resources and services to those in the education enterprise.

For example, NAEP has published objectives from its 1985-86 assessment in the subject areas of science, math, and computer competence. These materials, representing the reasoned consensus of panels of experts and reviewers, are popular resource materials among teachers and curriculum developers. Objectives for reading, citizenship, geography, history, and writing will be published in 1987, distributed to hundreds of professional education groups, and announced in the education press.

NAEP also has available public-use data tapes from the 1983-84 reading and writing assessment and the 1985 young adult literacy survey, and a data tape for the 1985-86 assessment is being readied. These materials and accompanying user guides are available at minimum cost and provide researchers with opportunities for further investigations.

Education is a deep-rooted local institution of government in the United States. The decisions flow from the parent, the individual teacher, the principal and his or her staff, the superintendent, the local school board, and a variety of state government officials. While there is considerable similarity among schools across the country, uniformity is neither present nor desirable. The Nation's Report Card strives to serve this vibrant, decentralized system with a central source of information about educational progress and the context in which it takes place.

This balanced mission is to be achieved without insinuating any control over curriculum or permitting the intrusion of the federal government. A strengthened Assessment Policy Committee with mechanisms in place for selecting its own membership, and advised by its own competent Technical Advisory Committee, has conscientiously directed this activity since July 1983. This governing board has insisted on detailed procedures that would assure consensus and scrupulously protect NAEP's reputation for accuracy and reliability. As NAEP's "executive," the APC has striven for the balance that would produce useful and dependable information.

It is this balance that NAEP is chartered to strike.

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